

REMARKS

Applicant's attorney gratefully acknowledges the interview granted by Examiner Chang on January 17, 2007.

At that interview, it was agreed that the rejection of claims 1-3, 9, and 21-23 would be overcome if the second paragraph of claim 1 were amended to delete "in a direction opposite from said surface layer", if the fourth paragraph of claim 1 were revised to delete the reference to "in a direction of the width" and if "foams" were replaced with --foam cells--, and if the fifth paragraph were amended to replace "whose" with -- said network of continuous holes having an--, and further if "space volume" were replaced with --diameter that--. Support for each of these changes is expressly present on page 10, lines 10-15 of the present specification, and in particular on page 10, lines 11-13, which reads: "These foams 3 [in the polishing layer] are communicated so as to form a network by unillustrated continuous holes whose diameter is smaller than that of the space volume of the foams 3."

Applicant's attorney is aware of the Examiner's concern that the amendment to the fifth paragraph of claim 1 compares a linear dimension to a three-dimensional volume. However, claims are to be interpreted in the same manner that persons of ordinary skill in the art would interpret them. Therefore, applicant's attorney submits that the imperceptibility of the continuous holes in microphotographs of a polishing sheet embodying the invention shown in Figures 6-8, in combination with the description given in the specification, would lead such a person of skill in the art to conclude that what was actually meant was that the average diameter of the holes is smaller than the average diameter of the foam cells, because if the average diameter of the holes were equal to or greater than the foam cells, the foam cells would be subsumed within the holes, which is clearly not indicated in the drawings.

Now that the Sec. 112 rejections to the claims have been overcome, applicant submits that the claims are allowable over the prior art of record for all the reasons set forth below.

The primary purpose of the invention is to provide a polishing sheet capable of providing flattening work on a hard material, such as glass, with a high degree of accuracy. While elastic plastic sheets have been used for this purpose in the prior art, the applicants

have observed that the relatively large, elongated cells disposed perpendicular to the polishing surface of such sheets are prone to collect polishing shavings that in turn can leave scratches in the surface being polished. The polishing sheet of the invention overcomes this problem of the prior art by the provision of an elastic plastic foam sheet wherein (1) the foam cells of the surface layer are, on average, smaller in volume than the foam cells present in the polishing layer; (2) the foam cells in the polishing layer are distributed uniformly both in thickness and in width; (3) the foam cells in the polishing layer are interconnected by a network of holes, and (4) the average length of the foam cells in the polishing layer near the polishing surface is less than half of the thickness of the polishing layer. As explained on page 4 of the specification, such a structure is capable of advantageously uniformly distributing a polishing liquid containing abrasive particles across the polishing surface as the sheet is worn down. Additionally, a groove may be provided in the sheet for the discharge of shavings that might otherwise scratch the surface being polished.

Claim 1 has been revised to emphasize the fourth listed structural feature of the invention. Specifically, claim 1 now recites an elastic plastic foam sheet including a surface layer and a polishing layer having foam cells, wherein the average space volume of the foam cells of the polishing layer are larger than the average space volume of the foam cells of the surface layer, wherein the foam cells of the polishing layer are interconnected by holes having an average diameter that is substantially smaller than the average space volume of the polishing layer foam cells, and

“wherein the average length of said polishing layer foam cells adjacent to said polishing face is less than half of said thickness of said polishing layer.”

The improved performance of polishing sheets that incorporate this feature is set forth in the tables on pages 29 and 30.

None of the references of record either discloses or suggests the invention recited in Claim 1. In particular, the Japanese ‘709 patent, is at best completely silent with respect to all four of the specifically recited structural features in claim 1. While it is difficult to ascertain the scale of the cross-section of the sheet illustrated in the sole figure of this

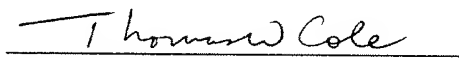
reference, the disclosed "vertical foam structure", if made on the same scale as the individual foam cells illustrated in Figure 1 of applicants' disclosure, would result in foam cells having a length which is greater than half the thickness of the polishing layer, in direct contradiction of the claim limitations. If on the other hand this disclosed structure merely illustrates grooves, as contended by the Examiner in the last Office Action, then this reference singularly fails to disclose any of the four specifically recited structural feature of the polishing sheet set forth in claim 1. Either way, claim 1 is clearly patentable over this reference.

Claims 2, 3 and 9 are patentable at least by reason of their dependency on claim 1.

Finally, this amendment adds new claims 21, 22 and 23 which further specify that the average diameter of the polishing layer of foam cells adjacent to the polishing face "is less than one-third of said thickness of said polishing layer...", that the polishing layer of foam cells are substantially spherical or ellipsoidal in shape, such that their major axes are, on average, "less than twice as long as their minor axes...", and that the average diameter of all of the polishing layer foam cells "is less than half the thickness of said polishing layer..." Support for these limitations is present at least in Figs. 1, 4A, 4B, 5A and 5B. As the prior art neither discloses nor suggests these features, these new claims are clearly patentable.

Based on the foregoing, Applicants respectfully submit that the application is in condition for allowance, and notification of the same is earnestly sought.

Respectfully submitted,



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